Box 29 Folder 19

[draft of
"Culture Materials Excavated from
Three Caves near Ocampo Tamaulipas Mexico"]

(23) #2-1

Circa 1954

CUCURBIT MATERIALS EXCAVATED FROM THREE CAVES NEAR OCAMPO, TAMAULIPAS, MEXICO

Thomas W. Whitaker, Hugh C. Cutler
and Richard S. MacNeish*

BACKGROUND

The cucurbit materials identified and discussed in this report were excavated by the third author from three caves in the Sierra Madre, near Ocampo, Tamaulipas, 5000 feet above sea level (see Fig. 1). A sequence of eight cultures of artifact complexes has been determined on the basis of the stratigraphy in these three caves and three other sites (Fig. 2). They are listed in Table I with tentative ages.

The sites are on the northern edge of the great prehistoric cultural development of Mexico. Cultural connections with areas to the south are evident, but the culture of these sites is differentiated from the cultures to the south by a noticeable lag in time. The first four of the cultures or phases at Ocampo have no cultural equivalents to the south but they do have them in the Sierra de Tamaulipas to the east (see Fig. 1).

The earliest culture remains, the Infiernillo phase, are perhaps more than 4,800 years old and represent a group who were basically wild-plant collectors but did some hunting. A few pods of beans (probably wild) and squash "rinds" and seeds occurred at the latest level. The artifacts consist of an extensive series of very large and crude choppers and scrapers, a few diamond-shaped and leaf-shaped dart points, checker-woven mats and a few distinctive nets and coiled baskets.

The Infiernillo remains seem to grade into those of the Ocampo phase, representing another group that were basically wild-plant collectors though pods of beans and quite a bit of squash suggest some planting. Large tri-

*We are indebted to the John Simon Guggenheim Memorial Foundation for assistance in carrying out this work.

angular and leaf-shaped atlatl dart points, as well as crude choppers, gouges and scrapers occur, and there is a series of new string, basket, mat and net types, and many wooden tools. Dating of this culture has a fairly sound basis. One specimen of vegetable remains has been dated by Dr. W. F. Libby by the carbon-14 method as 3,945± 334 years old. Another specimen from La Perra cave associated with a very similar culture complex has also been dated by Dr. Libby as 4,445 years old. Specimens of charcoal remains from the site of the Falcon Dam of Texas, associated with an archeological complex very similar to the Ocampo phase, have been dated by the Radio-carbon Laboratory of the University of Michigan as 4,650 ± 300 years old.

Flacco in turn, developed from Ocampo. The choppers had disappeared and new types of dart points (with a small contracting stem), string, baskets, twilled mats, nets, and scrapers had appeared. Though most of the diet of the Flacco people still consisted of wild food plants, a fair number of bean pods, and fragments of squash, as well as one or two fragments of very primitive (Bat Cave?) corn were found. The estimated age of 3,000 to 3,800 years for this culture is based on a carbon-14 date of 3,620 years old made by the Radio-carbon Laboratory of the University of Michigan, for the Coahuilla Complex in Frightful Cave, Cuarto Ciengas, Coahuilla. Stemmed dart points very similar to those of Flacco were found in this cave.

Guerra is the next phase in time. Besides wild food plants, bean pods, Bat Cave type corn, much squash and gourds and some fragments of woven cotton were found. Distinctive small and triangular and leaf-shaped projectile (dart) points, baskets, nets, mats with decorated edges, string, and wooden tools also occur. This culture (as well as part of the previous one) may have been contemporaneous with the beginning of village life and pottery making farther south in Mexico, some 2,300 or 3,000 years ago.

The next culture, Mesa de Guaje, which occurred 1800 to 2300 years ago, saw the introduction of pottery, figurines, and village life to the area and it had many cultural affiliations southward. These peoples were agriculturists and grew corn, (with teocentli), beans, squash, gourds, and cotton. Artifacts include loom-woven cotton cloth, a whole series of distinctive nets, mats, hand-modelled figurines, split-stick baskets, straight-stemmed, triangular and small ~~quoin~~ ovoid dart points and wooden tools. Remains of these materials may be cross-dated with late formative materials of the Huasteca and inferentially connected with late formative remains in the rest of Mexico. Carbon-14 dates for such cultures range from 2,000 to 2,600 years ago.

The Palmillas phase (900 to 1300 years ago) is the cultural apogee of the area and saw the construction of large towns (or cities?), stone pyramids and house platforms, the introduction of tobacco, platform pipes and cigarettes, the bow and arrow, finer cotton weaving, complexly woven mats, various kinds of string, serrated corner-notched projectile points (both arrow and dart), and mold-made figurines, etc. Its means of subsistence was agricultural like that of the previous period. This culture complex appears almost identical with that of the Zaquil Period (Period IV of the Huasteca) and parallels the late Classic Period of the rest of Mexico.

San Lorenzo has a similar subsistence but the cultural materials are definitely more poorly made. They include corrugated and brushed pottery, many notched and triangular arrow points, simple twilled mats, cotton weaving, and a host of small scraping tools.

San Antonio, which lasted into historic times, was a continuation of the previous culture. The material culture was even less complex, and the villages were smaller and without stone construction. Generally speaking, there is good evidence for cultural continuity with change brought about by internal development and by diffusion of culture from the south. Further analysis of the skeletal material from various horizons should confirm this hypotheses.

IDENTIFICATION OF THE CUCURBIT MATERIALS

Cucurbit materials were found in comparative abundance in all the cultures listed and in considerable diversity in some of them. Most of the material consists of the dry, hardened "rinds" or "shells" of the fruits, but seeds and peduncles were frequently present in quantity.

Table 1 summarizes the identifications. "Rinds" of *Lagenaria siceraria* (Mol.) Standl., were found at all cultural levels, but seeds were recovered from two levels only. "Rinds" and seeds of a wild species of *Cucurbita* (probably *C. foetidissima* HBK.) were present in seven cultural levels. However, in the Infiernillo phase, only seeds were found and in the Palmillas phase, only "rinds" were found. Peduncles of this group of plants were not ~~found~~ present in the excavated material, most likely because the fruits were gathered when mature. At maturity the peduncle spearates readily from the fruit, and may be broken off or lost. "Rinds" of *Cucurbita pepo* L. were found in all levels except the latest (San Antonio), while seeds were present in all levels. Peduncles of this species were identified from all but the two oldest cultures (Infiernillo and Ocampo). "Rinds" of *C. moschata* Duch. were identified from three of the later cultures, seeds from one, and peduncles from four or possibly five. The only positive evidence of *C. mixta* Pang. is a peduncle of a variety of this species at the Palmillas cultural level, but two seeds in material from San Lorenzo were tentatively identified as belonging to this species.

DISCUSSION

Lagenaria siceraria (white-flowered gourd or bottle gourd)

The ubiquitous occurrence of *L. siceraria* and the shape of the "rind" fragments suggest that fruits of this species were used for containers of various sorts, cutlery, rattles, etc. It continued to be used even after the development of pottery. For some reason only three seeds were found. This curious fact may indicate that seeds were used for food, and consequently not preserved.

The occurrence of *L. siceraria* at the lower levels of this site and at Huaca Prieta (Whitaker and Bird 1949) indicate that this species was established in both North and South America at a relatively early date. It also supports the idea that this species was carried to the Americas by oceanic drift as suggested by Towle (1952), supported by the experimental investigations of Whitaker and Carter (1954), and not brought to this hemisphere by pre-Columbian trans-Pacific voyagers. Further support of the theory that *L. siceraria* arrived in the Americas independent of man is found in the gross morphology of the seeds. The blocky, soft, corky-winged seeds of *L. siceraria* types common in Asia are not found in the New World. On the other hand the slender, hard, and almost wingless seeds of New World types resemble some of those found in African types (see Fig. 3).

Wild *Cucurbita* species (calabazilla, wild gourd)

Seeds, fruits and roots of several wild species of *Cucurbita* are used over a wide area by the Indians of Mexico and the southwestern United States. The wild *Cucurbita* species are difficult to distinguish from seeds and "rinds" alone. Positive identification requires specimens which include leaves and flowers. In addition, many of the wild species will hybridize among themselves and with cultivated species (unpublished data) and the progenies from such crosses are rather variable. Since *Cucurbita foetidissima* is the most widespread and most variable of all the wild species, and as it grows in the vicinity of Ocampo (the type locality being "Near Guanajuato, Mexico") we have given this name to the material from the caves even though it possibly comes from other wild species of this group.

Cucurbita pepo (pumpkin and squash)

Cucurbita pepo specimens from the Ocampo Caves are the oldest yet found in North America, and antedate the remains of this species found in Tularosa Cave, and Bat Cave (Martin *et al.* 1954; Smith 1953). *C. pepo* is the most

widespread cultivated species in North America, and has been obtained from Indian tribes or found in archaeological sites from Canada to Guatamala. This broad distribution is probably a result of the antiquity of *C. pepo.*

The peduncles and seeds of *C. pepo* found in the oldest levels of the Ocampo Caves are small compared with those of most present-day varieties (Fig. 4). All the fruits were probably small, and perhaps were harvested when green as are some varieties grown by natives of Central America and Mexico today. By the time of the Guerra culture (2200 to 3000 years old) several varieties were grown. This variability reaches a peak in the Palmillas culture (900 to 1300 years old), and then declines (Fig. 5). The peak diversity of this species coincides with the period when it is believed that the culture of the Ocampo Cave dwellers attained its maximum development.

The fact that corn did not appear in the Ocampo Caves site until Flacco culture (3000 to 38000 years old), 1000 years after *C. pepo* indicates that *C. pepo* antedated corn at this site. The same sequence occurred at Huaca Prieta (Whitaker and Bird 1949) where *C. ficifolia* Bouché and *C. moschata* antedated corn. These two sets of observations are significant because they suggest that corn and the three squash species did not originate at the same place, or if they did originate in the same area, they were not domesticated simultaneously.

Cucurbita moschata (squash, pumpkin and cushaw)

The center of diversity of *C. moschata* is in Central America and northern South America. At Huaca Prieta in Peru (Whitaker and Bird 1949) *C. moschata* was found at levels of approximately the same age as the lowest levels of the Ocampo Caves or slightly earlier. In the Ocampo Caves, *C. moschata* appears definitely in the Mesa de Guajo culture (1800 to 2300 years old), and there is a peduncle which is probably *C. moschata* in the Guerra culture (2300 to 3000 years old). These are the oldest *C. moschata* remains found in North America up to the present time. Peduncles of *C. moschata* were found in all of the later cultural levels (Fig. 6).

To the north, *C. moschata* first appeared about 1000 years ago and spread over a small part of the area in which *C. pepo* was grown. The limited distribution of this species is probably correlated with a lack of tolerance to low temperatures (Whitaker and Bohn 1950).

Cucurbita mixta (squash and pumpkin)

Cucurbita mixta is found only in the Palmillas culture (900 to 1300 years old), later than *C. moschata* and much later than *C. pepo* (Fig. 7). This collection may be the oldest *C. mixta* yet discovered. Two peduncles from Ventana Cave (Haury 1950), identified as *C. moschata* at a time when *C. mixta* was not recognized as a valid species, may be as old, but the dates for the Ventana Cave peduncles could not be determined accurately.

Cucurbita mixta spread to the north later than *C. moschata*. Specimens of this species are found in the Verde Valley, Montezuma Castle, and in San Juan River sites after 1200 A.D. (unpublished identifications). The Hopi and Taos Pueblos grew *C. mixta* before Europeans arrived. Like *C. moschata*, the distribution of *C. mixta* was limited perhaps by its sensitivity to low temperatures.

SUMMARY

A sequence of eight cultures of artifact complexes excavated from three caves near Ocampo, Tamaulipas, Mexico, were determined on the basis of stratigraphy. Tentative dates and significant artifacts for each culture are given.

A study of the cucurbit materials associated with the various cultures yielded the following information.

Lagenaria siceraria and wild *Cucurbita* species are found in all of the eight cultural levels at this site.

Cucurbita pepo is found at all levels, the specimens from the lowest levels being the oldest yet recorded. This species reaches its greatest diversity in the Ocampo Caves site at the time of highest cultural development.

Cucurbita moschata came in much later than *C. pepo* but the specimens are still the oldest yet known in North America.

Cucurbita mixta occurs later than *C. moschata* but the specimen is probably older than any other specimens discovered so far.

The materials from this site substantiate the hypothesis that *C. pepo* was widely distributed over North America at an early date, that *C. moschata* came in later and that *C. mixta* is an even more recent introduction. These latter species never attained the wide distribution of *C. pepo* in North America.

Haury, E. W.

1950. The stratigraphy and archaeology of Ventana Cave, Arizona. Univ. of Ariz. Press, Tucson.

~~Heizer, Robert F. and Franklin Fenega~~

~~1939. Archaeological horizons in Central California. American Anthropologist, Vol. 41, No. 3, pp. 378-99. Menasha.~~

Martin, P. S., J. B. Rinaldo, E. Bluhm, H. C. Cutler, and R. Grange Jr.

1952. Mogollen cultural continuity and change. The stratigraphic analysis of Tularosa and Cordova Caves. Fieldiana: Anthropology. Vol. 50, No. 1, pp. 1-528. Chicago.

Smith, C. E.

1950. Prehistoric plant remains from Bat Cave. Bot. Mus. Leaflets Harvard Univ., Vol. 14, No. 3, pp. 157-180. Cambridge.

Towle, M. A.

1952. The pre-Columbian occurrence of Lagenaria seeds in coastal Peru. Bot. Mus. Leaflets Harvard Univ. Vol. 15, No. 6, pp. 171-184. Cambridge

Whitaker, T. W. and J. B. Bird.

1949. Identification and significance of the cucurbit materials from Huaca Prieta, Peru. Amer. Mus. Nov. No. 1426. 15 pgs. New York.

Whitaker, T. W. and G. W. Bohn.

1950. The taxonomy, genetics, production and uses of the cultivated species of Cucurbita. Econ. Bot. Vol. 4, No. 1, pp. 52-81. Lancaster.

Whitaker, T. W. and G. F. Carter.

1954. Oceanic drift of gourds - experimental observations. Amer. Jour. Bot. Vol. 41, No. 9, pp. 697-700. Baltimore.

U. S. Department of Agriculture
La Jolla, California

Missouri Botanical Garden
St. Louis 10, Missouri

National Museum of Canada
Ottawa, Canada

Haury, E. W.

1950. The stratigraphy and archaeology of Ventana Cave, Arizona. Univ. of Ariz. Press, Tucson.

Martin, P. S., J. B. Rinaldo, E. Bluhm, H. C. Cutler, and R. Grange Jr.

1952. Mogollen cultural continuity and change. The stratigraphic analysis of Tularosa and Cordova Caves. Fieldiana: Anthropology. Vol. 50, No. 1, pp. 1-528. Chicago.

Smith, E. C.

1950. Prehistoric plant remains from Bat Cave. Blt. Mus. Leaflets Harvard Univ., Vol. 14, No. 3, pp. 157-180. Cambridge.

Towle, M. A.

1952. The pre-Columbian occurrence of Lagenaria seeds in coastal Peru. Bot. Mus. Leaflets Harvard Univ. Vol. 15, No. 6, pp. 171-184.

Whitaker, T. W. and J. B. Bird.

1949. Identification and significance of the cucurbit materials from Huaca Prieta, Peru. Amer. Mus. Nov. No. 1426. 15 pgs. New York.

Whitaker, T. W. and G. W. Bohn.

1950. The taxonomy, genetics, production and uses of the cultivated species of Cucurbita. Econ. Bot. Vol. 4, No. 1, pp. 52-81.

Whitaker, T. W. and G. F. Carter.

1954. Oceanic drift of gourds - experimental observations. Amer. Jour. Bot. Vol. 41, No. 9, pp. 697-700. Baltimore.

U. S. Department of Agriculture
La Jolla, California

Missouri Botanical Garden
St. Louis 10, Missouri

National Museum of Canada
Ottawa, Canada

LIST OF ILLUSTRATIONS

Fig. 1. Outline map of Tamaulipas, Mexico, showing the approximate location of the Sierra de Tamaulipas Caves (x), and the Ocampo Caves in the Sierra Oriental (y). Inset-outline map of North America; Tamaulipas indicated by black spot.

Fig. 2. Excavations at the Ocampo Caves. Vertical wall of a trench in cave Tm c 274, showing superimposed charcoal floors. Distance between the two white vertical markers - 5 feet.

Fig. 3. Seeds of *Lagenaria siceraria*. Left - two seeds of the broad, corky, winged type common in Asia; center - two seeds of narrow, slender type from Africa and the New World; right - two seeds from the Ocampo Caves - Mesa de Guaje culture.

Fig. 4. Seeds of *Cucurbita pepo*. Left - two seeds from the Infiernillo culture - note small size; center - one seed of a modern variety from the San Lorenzo culture; right - two seeds from the Mesa de Guaje culture.

Fig. 5. Peduncles of *Cucurbita pepo* and *C. moschata* from the San Lorenzo culture. Left - peduncle of *C. pepo*; center and right two peduncles of *C. moschata*.

Fig. 6. Four peduncles of *Cucurbita pepo* from the Palmillas culture. Variability in morphology suggests that several varieties were grown.

Fig. 7. Peduncle~~s~~ of *Cucurbita mixta* from the Palmillas culture.

[draft 12. ㉓ #24
"Ceramic Material Excavated from
Three Caves near Ocampo Tamaulipas Mexico"]